of rice had risen to 7 seers per rupee, and though there was a slight recovery when the new crop came in, the improvement was only temporary and prices ranged between 7 and 7½ seers at Purūlia, rising at times as high as 4½ and 5 seers at more remote markets, until the new crop began to come into the market in September and October In spite however, of these obviously adverse conditions only one of the various signs, which are treated as famine warnings, *i.e.*, increase in crime, was noticeable in marked degree, and even this was practically confined to the southern and eastern parts of the district where the Bhumij population have not yet outgrown their earlier reputation as "chuārs" and apparently still prefer thieving to hard work, when the opportunity is given, or the necessity for one or the other is forced on them by hard times. Nowhere in the district at any period of the year was there any marked increase in the number of beggars, or of obviously underfed wanderers. The year was, it is true, one of excessive mortality, but the immediate cause, *i.e.*, a severe epidemic of cholera, cannot be ascribed as due to insufficient or improper food as it originated in the coal fields where wages and food supplies were ample; the primary cause was the inadequacy of the water supply and absence of sanitary arrangements for the enormous population employed in the coal industry, which was then at the height of the boom. The ability of the people to resist famine was due to the causes already enumerated in the early part of this chapter, the large demand for labour in the coal fields and elsewhere, the enormous sums made out of the lac crop, and the ability of a considerable part of the population to carry on for some time on *mahua* and various edible jungle products in lieu of or in addition to a scanty dole of rice or other staple foods. Additional causes were the considerable sums made by the cultivators by the sale of their surplus rice in the previous year, the fact that their credit was far from exhausted, and finally the very considerable demand for field labour throughout the district for the excavation of new *bāndhs*, clearing out of old *bāndhs* and making of new fields for rice cultivation, the two first of which operations were facilitated by the exceptional drought, which had resulted in an exceptionally low subsoil water level, while capitalists, whether money-lenders or cultivators with savings or substantial credit, were specially encouraged to bring new land under rice cultivation by the prospects of high profits in the event of a continuance of the prices that had ruled in the preceding years. To persons on more or less fixed income whether from service or rents the year was undoubtedly a hard one, and numbers of small cultivators must have ended it in heavy debt, if not with absolutely exhausted credit, and not a few were obliged to alienate permanently a part, at any rate, of their holdings. Rupees 32,000 was distributed in loans, Rs. 20,000 under the Land Improvement Loans Act and Rs. 12,000 under the Agriculturists' Loans Act mainly in the north of the district during the first six months of 1908, but beyond this no direct or indirect famine expenditure was incurred.

General conclusions. The general conclusion to be drawn from the histories of scarcities given in the preceding paragraphs is that Mānbhum, though dependent mainly on a single crop, *i.e.*, the late or winter rice crop, is no longer liable to the extremes of famine, which the absence or difficulty of communications made possible 35 and 40 years ago; *that the outturn of rice even in a year of partial* failure, *e.g.*, from 75 per cent to 80 per cent. of a normal crop, still leaves a considerable margin over what is required for a year's consumption, and that in consequence a single year's failure not preceded by a partial failure in the year previous, is hardly likely to result in anything more than distress among the smaller cultivators and persons on small fixed incomes, and that even when the crop is a more or less complete failure in such a year, the other sources of subsistence available and the large local demand for labour will considerably reduce the numbers of those for whom, in less favoured districts, relief works would be necessary.

Floods, earthquakes, locusts. Floods are practically speaking an impossibility in Mānbhum, no earthquake has within the memory of man done any serious damages, though that of June 1897 was felt, and more recently smaller shocks in May and August 1909. Visitations from locusts have been very rare and the damage done small. In short, except in respect of liability to famine, the district may be classed as a specially favoured one.

CHAPTER VII.

RENTS, WAGES AND PRICES

Cash rents.

No regular settlement of rents has yet been carried out in the district as a whole, and accurate information of the actual incidence of rent per acre of the different classes of cultivated land is difficult to obtain, owing to the fact that land is ordinarily measured in terms of *maunis*, *pouas*, *rekhs*, *kats*, etc., which represent either fractional shares in villages and not specific areas of land or else the area which can be sown with a specific quantity of the seed usually rice, which will necessarily vary not only with the quality of the soil but also the idiosyncrasies or customs of particular villages. For purposes of assessment of rent lands are usually divided into rice or *dhānkhet* and upland. *Dhānkhet* is again sub-divided into *bahāl*, *kānāli* and *baid*, the distinction between which has been given in the preceding chapter. These again may be further distinguished into three or even more classes, but this is a comparatively rare refinement. Uplands are classified into *gora* (or *tānr*) and *bāstu*.

In the extreme north of the district in some 52 villages tenanted by Sonthals in the Tundi estate the rates of rents adopted as the basis for a resettlement conducted by the district authorities in 1906-07 were as follows :- *Bahāl* Rs. 6, *kānāli* Rs. 4-8, *baid* Rs. 3 per acre but, as a matter of fact, the total assessment only worked out to something less than Rs. 2 per acre all round, as considerable concessions had to be made in order to keep the enhancement in the case of individuals and of villages below the limit of 100 per cent fixed by the Board of Revenue; the uplands were in the case of this area left unassessed, and rice fields newly prepared since the previous settlement were assessed only at half rates.

In the small temporarily settled estates of Mātha and Kailāpal the rates adopted in the last settlement (1900) were for *bahāl* Rs. 3-6 and Rs. 2-10 per acre, for *kānāli* Rs. 2-4 and Rs. 1-14 and for *baid* Rs. 1-14 and Rs. 1-8, respectively. In the case of

Kailāpal *bāstu* was assessed at 12 annas and *gora* at 3 annas, but the assessment was subsequently cancelled. Both these estates lie in the least developed part of the district and the rates in comparison with those adopted for Tundi are apparently very low. They are, however, not very different from the rates generally prevalent over the southern half of the district

Thus in Barabhum and Patkum where in 1884 a survey was made of the ghatwali tenures, the rates adopted in the compromise as the basis of settlement of the excess lands with the ghātwals holding them were Rs 3 for *bahāl*, Rs 2 4 for *kānāli* and also for sugarcane land, Re. 1-8 for *baid*, and annas twelve for cultivated *danga* per acre respectively. Except, however, in one *taraf* or tenure, that of Dhadka, settlements were not actually *effected at these rates*

In the large area within the Zamindari of Barabhum which is held in patni by the Midnapore Zamindari Company, the standard rates shown in the agreements taken from their tenants are for *bahāl* Rs. 4-8, *kānāli* Rs 3, *baid* Rs 2-4, *ikhu* sugarcane) Rs. 2-4, *udbāstu bār*, (cultivated land near the homestead) Rs. 3, *gora* annas 12, besides various rents for trees, etc These rates, however, represent what the Company would like to enforce, and are very much in excess of what they are actually able to collect Thus to quote a typical instance, when the total calculated at the rates shown in the kabuliyat, worked out to Rs. 16 2, the actual rent agreed upon was Rs. 7-4, the difference being described as a temporary remission. In another where the rent for rice lands at these rates amounts to Rs 31-10, and for *gora* to Rs 5-14, the amounts shown as the demand in the collection books are only Rs 11 and Re 1-8 respectively. It follows, therefore, that the actual rates in force in this area are from one-third to one-half only of the nominal rates shown in the tenants' agreements

Further north, however, and more particularly within the Pānchet Estate, where sub-infeudation of the proprietary right is of old standing and in a large majority of the villages the immediate receivers of the rents are outsider *ijārādārs* whose interest it must always be to screw rents up as much as possible during their limited tenure of the post, the general rates are much higher and frequently range from as much as Rs. 7-8, Rs. 5-10, Rs. 3-12 for the different classes of rice lands to Re. 1-8 or Re. 1-14 for uplands and attempts are occasionally made through the courts to obtain rents at double these rates.

In general terms, therefore, it may be said that the average rates for rice lands vary from Rs. 7-8 to Re. 1-8 per acre according to quality and position, and for other lands from Rs. 3 to annas 12 per acre.

Prevalence of customary or quit rents.

This statement, however, is at the best a general one, the fact remaining that in very many villages in the district lands are still held on what are practically quit rents averaging not more than 8 annas to a rupee on the total area now under cultivation. Elsewhere, on the other hand, where the aboriginal settler has been ousted or is in process of being ousted, new settlers hold at what are practically competition rents, and which represent more accurately the present productive value of the land. It is obvious that a new tenant inducted on lands already terraced and levelled for rice cultivation can afford to pay a higher rent than his predecessor who has been ousted after undergoing all the labour and expense of preparing the fields. The general tendency, however, is for the old settler strenuously to resist all attempts to enhance the rent which he and his ancestors have paid for generations, even when his holding has undoubtedly extended far beyond the original area settled or assessed to rent; the landlord, as a rule, finds it difficult to prove excess cultivation, and even to rebut the pleas regularly set up of non-enhanceability, and in consequence generelly fails in enhancement suits; when he is unscrupulous he more often than not has recourse to underhand and roundabout methods of ousting the refractory tenant from the whole or a part of the tenancy, a course for which the absence of any survey records and of any description of lands in documents by metes and bounds, the ordinary description being by a name only, gives special facilities.

Nāyābādi settlements.

The arrangements customary in regard to lands brought under cultivation under leases for that specific purpose vary in different parts of the district, but ordinarily the holder of a *nayābādi* or *ahriat* tenure, terms which correspond fairly closely to *korkar* and *khandit* of other districts of the Chota Nāgpur Division, gets a permanent deduction of six annas in the rupee on the rent fixed, which becomes payable only after the land has actually been prepared for cultivation, for which a period is ordinarily fixed. In other cases the arrangements may be for a progressive rent, the full rent, in this case also six annas in the rupee less than the rent calculated at the ordinary rates, being reached in 5 or 7 years.

The above applies, however, to comparatively modern settlement of specific areas. The old and original '*nayābādi*' settlement was almost invariably one of a village or portion of a village specified in terms of *powas*, *i.e.*, quarters, or of *rekhs*, each *rekh* being the sixteenth part of a village. The settlements so made were of the nature of *jangalburi* or clearing leases, the applicant being given permission to clear and bring under cultivation any land within the boundaries of the village, or the share of it agreed upon. Nominally, therefore, the tenant's rights extend over the whole village or a specific fraction of it, both cultivated and waste, subject to payment of either a fixed quit rent, or of rents at fixed rates calculated on the area under cultivation. In practice, however, the landlord or farmer assumes, wherever he can, superior rights over all lands not actually under cultivation, and endeavours to lease out the lands still waste with other cultivators when the descendants of the original settlers do not meet his terms. The assumption that the *rekh represents a fraction of the cultivation, and not of the whole village*, was, it may be noted, followed in the ghatwali compromise of 1884, and the example then set by Government (against its own and the ghātwal's interests) has naturally been widely followed. Another variation of this class of settlement usually met with in the north of the district in the case of settlements of ancient date is when the tenant is given permission to bring under cultivation of land as much land as will require a certain quantity of seed grain, from which comes the use of *kāt* and *muri* both of which words mean a maund or thereabouts of grain, as a measure of area. The opportunities for dissension between the modern landlord and his tenant, where areas are so vaguely expressed and settlements made in such haphazard fashion, are sufficiently obvious and require no special description.

Produce rents.

Produce rents are not very common except in the case of small areas let out to the poorer class of cultivating labourers, not infrequently also the real tenant holds under his mortgagee on *bhāg*, when he has got so involved as to be obliged to convert his simple mortgage into an usufructuary mortgage Ordinarily, in the case of such *bhāg* settlements, the produce is divided half and half, but where the landlord provides seed and cattle for ploughing, the tenant receives one-third only. In these cases the tenant is really a mere servant, known as *krishan ardhiar* or *aidhar* and his third share of the crop represents his wages for cultivating his master's land.

It is not uncommon for a part of the rent to be paid in kind, usually only a small quantity of rice or other grain required for the consumption of the landlord's family; this is more especially the case where the landlord has little or no *khas* land on which to grow his own grain. In some cases this demand is, perhaps, a true rent, but in the majority of cases in which it is claimed through the courts it is treated as *ābwāb*.

Abwāb.

Besides rent and cesses, the latter of which are not infrequently demanded and paid at more than the legal rate of six pies per rupee, there are other customary demands of the nature of *ābwāb* or predial conditions

Among these the commonest are *shyāma ghi*, representing the money value of a goat and a certain quantity of *ghi* due annually to the Zamindar at the time of the Durga festival. *Shyāma chaul* is similar, rice being substituted for *ghi*; a certain quantity of straw is also occasionally demanded. The following actual instance from a Brahmottar village in Pargana Barābhum may be quoted, as illustrating these and other *ābwāb*. Here, for what is described as Re. 1 worth of rice land, the tenant is expected to pay:—

in cash—	
Rent ...	... 1 rupee
Batta ...	... 1 anna
Cess ...	... 1 „
in kind—	
Rice ...	... ½ seer
Dhān ...	... 3 seers
Straw ...	... 80 bundles
Ghi ...	... ½ seer

besides furnishing 4 days' labour per annum with a plough (*hāl-bet*), and one day with a spade (*kodāl-bet*) in the landlord's own cultivation, and one day's *ghar-chhauni*, *i.e.*, assisting to repair the landlord's thatched roofs.

Bet-begāri or the system under which the tenant has to do a certain number of days' work on the Zamindar's own cultivation still survives, as the instance above quoted shows, but the extent to which the landlords are able to enforce their demands for assistance in cultivating their *khās* lands is now largely limited, and, except in the more out-of-the-way tracts, little attempt is actually made now to enforce such demands, cultivation of the *khās* lands being done for the most by *bhāgis* or *sājas*, *i.e.*, labourers or undertenants paid by a share of the produce.

Other demands, which do not appear in the rent papers, are the customary dues of the collecting staff, and what are known as *māngan* or "occasional benevolences," namely payments in cash and kind made to the Zamindar on the occasion of births, deaths and marriages in his family, or on his paying a persona visit to a particular village, or to help him with the expenses of some big civil suit.

Bāstu rent. Where the old customary rents continue, and even in some places also where, for one reason or another, these have given place to rents based on the present condition and productive powers of the soil, it is not usual to assess to rent any but the rice lands, and such other lands as are planted with sugarcane or other special crops. For the high land round his hut, and for other high lands from which in one year out of four or five a scanty crop of *kodo*, *kurthi*, or some inferior oilseed is obtained, the tenant ordinarily pays no specific rent. In lieu thereof in Barābhum pargana it is customary for the tenant to pay a regular *bāstu*, or homestead rent. The rates at which this rent or tax was assessed in 1884 were

		Rs.	A.	P.
For every cultivating family	...	1	1	0
„ „ non „ „	...	0	8	6
„ „ widow ...	...	0	4	0

and these rates have continued to the present day, except in areas which came under the influence of Messrs. Watson and Company and their successors in interest, who have succeeded in many villages in getting the tenants to agree to pay double these rates, on condition of being freed from the obligation of growing indigo.

When a *bāstu* rent in cash is not charged, it is not unusual to find the rent of the high lands represented by a demand for a fixed quantity of grain or other produce, *e.g.*, in one instance noticed the demand was 80 heads of maize, and one cartload of manure.

Miscellaneous. A rent or cess is also not infrequently charged for the privilege of rearing lac on *palās*, *kusum* or *bair* trees and of collecting the flower and fruit of the *mahua*. Tenants ordinarily claim the right to take such jungle produce as they require for their own use free of charge, but in some estates at any rate they are unable to resist the landlord's demand for a jungle cess, known variously as *jangalkar*, *bankar* or *kathikar*. For bamboos cut from the jungles *bānskar* is charged, and even the privilege of grazing cattle in the jungle does not invariably escape assessment. The liability to pay such demands is, however, constantly in dispute, and it is probable that most of them are of comparatively recent origin, the landlords having taken advantage of the indefiniteness of the customary rights claimed by the tenants, to force on them these demands now that the increasing population and the denuded jungles have made all ordinary jungle products an easily marketable commodity. In the case of lac the imposition is undoubtedly of recent origin; no objection is ordinarily taken where trees or specific patches of jungle are leased out for the express purpose of rearing lac, except where the tenants are strong enough to assert their claim to all rights in the jungle and waste lands. The attempt, however, to assess trees standing on a tenant's holding, or reared by him thereon, is a gradually growing cause of friction between landlord and tenant.

WAGES.

For some years past there has been a steady rise in the wages paid for labour, among the chief causes for which must be placed the development of the mining industry and the improvement of communications by road and rail. Another accelerating cause in recent years is the increased activity in the lac industry, the high prices obtainable for the raw product in 1908 and the two years preceding having enormously stimulated production, as well as encouraged the opening of new factories. In the case of skilled labour the increase is not very marked in the last ten years as the rise had already taken place prior to that period; still expert masons and carpenters now get from 10 annas to 12 annas or even one rupee per diem; superior blacksmiths, who already got 12 annas in 1900, now earn from 12 annas to one rupee. In the same period the daily wages of a common mason and carpenter have risen from a maximum of six annas to eight annas and those of a common carpenter to as much as ten annas; and the common blacksmith, who could earn only 8 annas per diem in 1900, now demands and receives from 8 to 10 annas. The price of unskilled labour, so far as paid in cash, that is to say, in the towns and industrial centres, has risen more appreciably; the daily wage of a cooly varies now from 3 to as much as 5 annas as compared with only 2½ annas in 1900; women and boys, who then got only 1½ annas a day, now get from 2 to 2½ and 2 to 3 annas respectively. In the villages wages are almost entirely paid in grain, two to three seers of rice or some cheaper grain being the ordinary field-labourer's daily wage; this at the rates at which the cultivator realises on his surplus crop may be taken as equivalent to 2 to 2½ annas, though to the cooly who has to purchase in small quantities it means a good deal more. Ploughmen earn rather more, 2½ to 3 annas in cash or its equivalent, and cartmen from 3½ to 4 annas. *Ghārāmis* both in town and country can earn from 3 to 5 annas per diem. Much of the field labour in the case of larger holdings is done by quasi-subtenants known as *krishan*, *ardhiar*, or *aidhar*, who do the ploughing, sowing, transplanting and weeding of the crop and get usually one-third of it as their remuneration. Harvesting is largely left to women *kâmins* usually also paid in kind out of the standing crop, one edge of the field, known as *chhincha*, usually where the crop is poorest, being left them as their perquisite.

The fact that the demand for labour in the coal fields within and just outside the district is constant and considerable, and that the possible advantages of Assam as a field for surplus labour are well known in every part of the district, probably accounts for the comparatively liberal treatment of the ordinary field labourer including the *aidhar* just mentioned, and for the small extent to which, in this district, as compared with some of its neighbours, the labourer or *kamiya* is a mere bond slave. Every zamindar and indeed every holder of any considerable extent of land has his *kamiyas*, but it is ordinarily only those of the purely money-lending classes or the petty foreign *thikâdar* or *ijârâdar* type, who are in the strict sense bond-slaves, that is to say, persons more or less permanently bound to work for a particular master in consideration of an advance or advances of money; such persons are housed, clothed and fed, and not too well, by their master, and their wages are set off against the loan, the chances of paying off which are usually but small. Obviously, in a district like Mânbhum this system, formerly very common if not almost universal, must tend to die out, as the over-driven *kamiya* will sooner or later find an opportunity of clearing out with his family to the mines or Assam, leaving his creditor in the lurch. The system of large advances in order to attract labour is, it may be noted, common in the lac factories, and recourse is frequently had to the courts to enforce the contracts under the provisions of Act XIII of 1859; this system is not in itself objectionable, but where, as is often the case, the factories do not provide continuous labour, being closed for several months in the year, and regular payment of the advance while the cooly is earning high wages is not insisted on, it very quickly assumes most of the objectionable features of the *kamiya* system, with the added terror of the criminal law as a means of enforcing the contract.

Village labourers.

The blacksmith and the carpenter in the villages, who make and repair the agricultural implements, household utensils, etc. of the ordinary cultivating families, are ordinarily remunerated by a regular annual allowance of grain per family or householder. The blacksmith supplies his own coal; his remuneration is 20 seers of *dhan* a year per plough, and a *binra* or sheaf, yielding 2¼ to 3 seers when threshed. For every adult resident he gets also 1 seer of grain per annum for sharpening sickles and another seer for affixing the share to a new plough. The Dhobi or washerman, when one is employed, gets cash at the rate of 1¼ anna per score of articles washed The other village officials or servants, *i.e.*, the barber, the Kumhar or potter, the Goāla, Chamar and Dom are usually paid in cash or kind, as their services are required. The barber gets special gratuities either in grain or cash on the occasion of any birth in a family, the fee for a boy being invariably double that for a girl.

Supply of labour.

The following remarks regarding the supply of labour in Manbhum are quoted from Mr. Foley's Report on Labour in Bengal (1906)—

"Besides the emigration to tea, a certain number, but not apparently a very large number, emigrate every year to Calcutta where they work mostly as scavengers throughout the year, returning for some six weeks in June to transplant their paddy. Others go to the Sundarbans Lac-rearing gives occupation to many others. The district is not congested, the people are fairly well off, and the Jharia coal-fields in the north and the Rānīganj coal-fields across the Damodar form the natural outlet for all the labour available in the district The Kurmi, Sonthal and Bhumij are the most numerous castes in the district, but there are also 99,000 Bāuris. The labour is not suitable for mills and, for the same reason stated in the case of Hazāribāgh and Rānchi, not to be recommended for handling goods. Only a few castes seem to have taken to mining, and thus there is a scarcity of coal cutters in the Jharia mines, though there is no scarcity of surface labourers. It would appear that recruits for the coal mines, especially from the south of the district, are increasing but only gradually. The people should apparently be encouraged to take advantage of the high rates they can make in the mines. There is no reason why they should migrate to any other industry, and from the opinion given me by the Manager of the Pānchet Encumbered Estate, increased migration to any other industry would be looked on as objectionable of the Zemindars."

Since the above was written the demand for labour in the coal-fields has greatly increased, and with rates of wages generally high throughout the district there is but little inducement for labour to migrate, and the Assam Labour Committee of 1906 fully realised that the days were numbered in which Mānbhum could be looked upon as a favourable field of recruitment for Assam.

Prices.

YEAR.	Common rice.	Wheat.	Gram.	Maize.	Salt.
	Sr. Ch.	Sr. Ch.	Sr. Ch.	Sr. Ch	Sr. Ch.
1896-1900 ...	14 10	10 9	13 6	16 4	9 13
1901-1905 ...	13 11	11 12	14 1	22 8	10 8
1906-1910 ...	10 11	9 3	10 11	14 0	16 8

The average prices (in seers and chittacks per rupee) of common rice, wheat, maize and salt during the last fortnight of March, for the 15 years ending in 1910, are given in the margin. Excluding salt, the fall in the price of which is due to successive reductions in the import duty thereon, the prices of all food-staples have risen; in the case of rice which is the ordinary food-grain produced within the district, and consumed by the bulk of the inhabitants, the average price for the more recent quinquennium was more than 25 per cent in excess of what it was in the five years which closed the last century; maize, which is much less important but grown and consumed in considerable quantities in the wilder portions of the district, had increased in price by over 12 per cent. Special causes, however, affected prices generally to an unusual extent in the years 1907 and 1908, *i.e.*, the general shortage of the rice crop in the Province of Eastern Bengal in the former year and the local scarcity in the succeeding year, and in the last year of the period prices considerably improved, the year ending with rice selling at 14 seers per rupee and maize at 20 seers

Within the year the course of prices varies in normal years mainly with the time of the harvest. Maize is cheapest in September and October, and rice in December and January when the main crop has been reaped; with a full harvest they remain fairly steady with a tendency to a slight rise till April and May. By this time the bulk of the local maize crop has been consumed and prices harden rapidly till the new crop is harvested in September. In the case of rice, the rise throughout May, June and July is fairly continuous, August as a rule marking the highest limits. Then, if the prospects of the early crop and of maize are good, and conditions are hopeful for the main winter rice crop, there is a steady fall with perhaps a sudden and considerable drop in November, when it is quite certain that the crop is to be an average or a bumper one. Variations of price in the more remote markets are greater, as a rule, than those at the main centres and near the railways, where the retail prices are more or less regulated by the big traders, who watch the course of prices in the outside world as well as locally.

The maximum price of rice in the famine of 1866 at Purūlia was 4 seers for the rupee at the end of August; in 1874 the price never went above 13 seers in July; between October 1896 and September 1897, ten seers was obtainable at Gobindpur for the rupee during two fortnights only (the 1st in October and the 2nd in December) and from May to September less than eight seers, the maximum price seven seers being reached in the early part of July. At Purūlia prices did not fall below 10 seers till March, and below 8 seers till the end of May and the maximum price was $7\frac{5}{16}$ seers in the latter half of July. With these figures may be compared those for 1907-08, during which the average price of rice was $7\frac{1}{2}$ seers for the rupee, the maximum variation being from 8 seers, for short periods only in November 1907 and the following January, and again in September 1908, and 7 seers at which it remained steady throughout July during which month, in the more remote markets, *e.g.*, Manbazar and Bandwān, prices as high as 6 and even 5 seers per rupee were reported.

MATERIAL CONDITION OF THE PEOPLE.

No more striking illustration of the improvement that has taken place in the material condition of the people generally can be given than the manner in which, without assistance from Government, they were able to tide over nearly two years of high prices in 1907 and 1908, high prices, of course, if coincident with good crops, mean considerable direct benefit to the cultivator but in the latter year, at any rate, it was only the fortunate few who could have had any appreciable margin over the amount required for home consumption by which they could have profited financially. Moreover, it must be remembered that rice is in this district the ordinary staple consumed, and cheaper grains are not produced in anything like sufficient quantity to take the place of rice converted into cash. Though, therefore, it must be accepted that the high prices they obtained for their surplus in 1907, must have gone some way to securing the position of the cultivating classes throughout the ensuing period of short crops and famine prices, some other cause must be found for the smaller cultivators' and landless labourers' ability to hold out without some form of relief from outside. For the latter, as has already been shown, there was an ample field for employment at rates on which they could live comparatively well even at famine prices; in the case of the small cultivators, it was most probably the high prices obtained for lac in the previous years which made resistance possible, inasmuch as they were thereby saved from exhausting their credit. Moreover, the continuance of high prices over a considerable number of years had, in itself, improved their credit by increasing the selling value of their holdings, more especially in the more congested areas where additional land could not readily or cheaply be brought under rice cultivation. At the end of the period of high prices there can be no doubt that the smaller cultivators, and many also of the bigger men, had come practically to the end of their resources, and the records of the registration offices show that during the period an abnormal number of usufructuary mortgages and sales of occupancy and fixed rent holdings and portions thereof were executed, and arrears of rent mounted up in almost all estates. Since then, however, there have been two full rice harvests, and credit must have been fully restored, while stocks of grains are largely held, wherever the necessity for raising cash by an immediate sale was not necessary. At the time of writing, therefore, the general condition of the cultivating classes is probably better than it has been at any time during the past ten years.

Of the condition of labourers it is unnecessary to say very much; in the villages there is ample employment at the customary rates, and, as has been shown in an earlier part of this chapter, there is an ample field for them in the coal and other industries within the district.

Landlords.

The condition of the smaller landholders, who have considerable cultivation of their own, besides rent collections from tenants, is similar to that of the cultivators in general. Their expenses are larger, they have as a rule more non-earning members of the family to maintain, but on the other hand their income is larger. Many of them, however, show a tendency to ape the bigger landholders in the matter of expensive marriages, feasts to Brâhmans and other ceremonies, with disastrous results to themselves. With very few exceptions the larger landholders, including most of the Zamindars or so-called Râjas of the district, are more or less heavily involved in debt. The causes are mainly and primarily their own or their predecessors' gross extravagances, and the resultant permanent alienation of considerable portions of their estates to money-lenders and others, and the necessity of providing for the maintenance of near and remote relatives, either by cash allowances or grants of land. In many cases it is the aping of a Râjput status which has been their ruin, improvement in status being mainly effected by marriages —necessarily expensive—into families of rather higher status in local or popular opinion than their own. Another cause in recent years has been the general rise in the standard of living, the fashion being largely set by the comparatively few big Zamindars, whose income has been doubled or even quadrupled by the fact of their being the owners of the mineral rights in the coalfields. Further reference to this state of things will be found in the paragraph dealing with Encumbered Estates in Chapter X.

Increasing improvidence.

Though, as above stated, the condition of the mass of the people is generally better now than it has been for years past, there are not wanting signs that the tendency is for expenditure to increase more rapidly than income. The improvidence of most of the aboriginal and semi-aboriginal races is almost proverbial, and the absence of any wish to provide for the morrow, or even of any idea of the desirability of making such provision, is everywhere conspicuous. The considerable earnings of the cooly classes are very largely spent in drinking and feasting, and the higher their wages the fewer days in the week or month will they, as a general rule, work. Similarly among the cultivating classes, though the drinking habit is less noticeable, (and even among the classes from whom a large part of the labouring population is drawn, it is largely confined to the consumption of home-made rice-beer (*hāndia* or *pachwai*) on the occasion of the regular festivals), there is little, if any, tendency displayed towards saving. Larger sums are spent on clothing and improved utensils, more expensive and more numerous ornaments are purchased, and also larger supplies of the articles of food and household use for which the cultivator has at all times to go to the nearest market, but the bulk of the extra proceeds of his crops go in more expensive show and *tamāsha* on the occasion of the various social ceremonies ; the aping of superior social status is not confined to the Zamindars or bigger tenure-holders ; among the Bhumij, especially, the claim to the dignity of Rājput extends much lower, and the holder of a few bighas more than his neighbours now not infrequently sets up to be a Rājput. Generally, wherever the tendency is towards Hinduisātion of a particular tribe or race, increased means stimulates the movement, and the extra earnings of the family are rapidly used up in the imitation of Hindu customs of early marriages and large dowries, expensive *srādh* ceremonies and the like, and a nucleus of debt to the *mahājan* remains even after a succession of good years. Even the high prices obtainable for rice have not as yet stimulated, in any great degree, extension of cultivation beyond what the requirements of an increasing family necessitate, and hardly anywhere within the district are serious efforts made to improve the yield from existing fields, and, as has been remarked in a previous chapter, any marked improvement in the system of agriculture whether in the matter of improving on the present yield, or in trying new or additional crops, can hardly be expected until it is forced on the cultivator by his sheer necessity.

Indebtedness. Indebtedness is more or less general, but the amounts are probably not, as a rule, excessive in proportion to the real value of the holdings, and in the majority of cases not more than could be cleared off without much difficulty or effort in a year of good crops, if the cultivator cared or were pressed to do so. The effects of the introduction of the Chota Nāgpur Tenancy Act which prohibits sales, and limits mortgages of lands held by occupancy tenants, will undoubtedly affect their credit, and will probably operate to their ultimate advantage by limiting their capacity for extravagance. It should certainly lead to greater advantage being taken by him of the Land Improvement and Agriculturist's Loans Act, very little use has been made of which in the past, except in years of scarcity ; it may also stimulate the opening of Co-operative Banks, which at present only exist among two small Christian communities at Purūlia and Pokhuria.

CHAPTER VIII.

OCCUPATIONS, MANUFACTURES AND TRADE.

OCCUPATIONS.

THE statistics obtained at the census of 1901 show that 67·1 per cent. of the total population of Manbhum are supported by agriculture, a figure considerably below the average for the Division. The agricultural population in all numbers 873,500 of whom 46 per cent., including some 1,300 rent-receivers, 347,000 rent-payers and 53,500 agricultural labourers, are actual workers. The industrial population accounts for 11·7 per cent. of the total, and of these rather more than half are actual workers, and include 16,000 miners, 9,800 cotton-weavers, 6,600 basket-makers and 4,400 workers in iron and steel; oil-pressers, rice-pounders, and workers in brass and bellmetal and in gold are also fairly numerous. Commerce and the professions support a very small number, only three per thousand of the population being engaged in trade, and 2·3 per cent. dependent on the professions for their livelihood; of the latter nearly half are actual workers and include some 1,500 priests, 2,700 religious mendicants, 400 teachers, 150 lawyers and 1,000 members of the medical profession of whom more than half are ordinary unqualified midwives; 118,000 persons are employed as earth-workers and general labourers and, with their dependants, make up nearly 15 per cent. of the whole population; numerically important also are the herdsmen and others engaged in breeding, keeping and tending cattle, who number over 33,000.

The predominance of agriculture in one form or another among the occupations of the district is as marked as it is elsewhere in Bengal, and excluding the landless labourer class there are few trades or professions, a considerable percentage of whose members are not also supported by agriculture. Of the more important manufactures and industries of the district and of its trade generally, a brief account is given in the succeeding paragraphs.

MANUFACTURES AND INDUSTRIES.

COAL.

The coal industry is naturally the most prominent feature of the trade and commerce of this district, and Mânbhum now ranks even ahead of Burdwan as producing the largest amount of coal of any district in India, though, as a competitor of Burdwan, it entered the field comparatively recently. The present limits of the district still include a portion of the Rāniganj field, but its fame as a coal-producing area is now practically identified with the Jharia field, of which, as well as of the industry generally, a more detailed description will be found in the succeeding chapter. In 1891, apart from the older mines of the Rāniganj field, only two mines were being worked in the district with an output of 78,000 tons, but with the opening of the Damūdar branch of the East Indian Railway in 1894 development became rapid; in 1903 there were 141 collieries at work, 115 in the Jharia and 26 in the Rāniganj field, with outputs of 2,746,000 and 246,000 tons respectively, and by 1908 the total number of mines working had risen to 281 and the total output to 7,062,000 tons. In 1900 the mines gave employment to 27,000 persons, a figure which had risen to 72,000 in 1908. The latest year (1909) for which figures are available show a considerable fall both in outturn, which dropped to 6,326,000 tons, and in the labour force employed (59,000 persons), due to the general depression in trade. The bulk of the miners employed are Bāuris and Sonthals, both local and immigrant, but of recent years there has been a tendency to import labour from upcountry (Peshwāris and others) on an increasing scale. For above-ground labour the field of selection is wider, and representatives of all the ordinary labouring castes and local aboriginal tribes are to be found. Wages of Re 1 or even more per diem can easily be earned by a man, and as most of his family can find employment on proportionately remunerative terms above or below ground, there is everything to make the cooly prosperous. Few, however, of them can be induced to work more than five days in the week, and large numbers of them only work for a few weeks at a time and go off home to spend their earnings. There is also a considerable exodus on the occasion of the various important village festivals, and during the cultivating seasons. All these causes of course go to reduce the average number actually employed and an average of 70,000 for the year probably means an actual labour force varying from a lakh or even 120,000 to as few as 40 or 50,000, according to the season.

FACTORIES.
Iron and Steel.
Pottery.

The factory industries, so numerous and important in the coal-field area in the neighbouring district of Burdwan, have still to be developed in Mânbhum. The Barākhar Iron and Steel Works, which is just outside the district, draws a large part of its raw material in the shape of ore from Malti, Dudhapāni, Chandil and other places in this district, and most of its coke from Jharia, but any description of the works belongs more properly to the Burdwan volume. Altogether 10,000 tons of ore valued at nearly Rs 51,000 were drawn from their various quarries in this district by this company in 1909, and a considerable labour force was employed. Iron is smelted on a small scale at a few places in the district, but the outturn is very small and only a very few families, mostly of Kols, are employed in this industry.

There are two brick, tile and pottery factories, both situated with the Rāniganj coalfield in pargana Pāndra. Of these the Brick and Tile Syndicate's factory at Gurtalbāri is of some years standing and employs from 250 to 300 persons; the Kumardubi Fire-brick and Pottery Works have recently been started and employ some 150 persons only. The only other factory worked under the Factories Act is the Barakar Coal Company's Engineering Works at Kumardubi where 300 persons are employed, the work done being mainly such as is required for the replacement and repairs of parts of machinery used in the company's various collieries.

The most important industry in the district after coal is the collection and manufacture of lac. The extent of the trade in this article in one form or another is shown by the large exports. No accurate figures are unfortunately obtainable, as separate statistics were not compiled by the Railway Companies till 1909, in which year the total export of lac in the form of stick lac, *i.e.*, not manufactured, and in the various manufactured forms was 200,311 maunds, valued at Rs. 40 to 50 lakhs. Lac

The number of people engaged in the collection of raw lac cannot be estimated as almost every small cultivator in the greater part of the district has at least a few trees on which he rears lac, and there are now also several large firms who arrange with the actual producers for more systematic cultivation; among these may be mentioned Messrs. Schroder Smidt & Co., who have leased the right to rear lac in the Mahta Protected Forests for five years at an annual rental of Rs. 400, and Messrs. Shaw Wallace & Co. who combine a lac business with coal-mining in their properties in the north-west of the district. In 1909 there were 118 regular lac factories in the district employing an average of nearly 6,000 persons. Jhalda is the most important centre of manufacture, but there are numerous factories also at Purulia and Balarāmpur, and a few at Chāndil, Chās, Mānbazar, Tulin and Gobindpur. The manufacturing industry is almost entirely in the hands of Armenian and Mirzapur firms; the rates of wages given are high, an adult male being able to earn from five annas to eight annas per diem, and skilled workers, both male and female, even more. The most important markets for the raw article are Mānbazar, Balarāmpur and Jhalda, but in almost every weekly *hât* throughout the district lac is brought in and sold to the agents of the manufacturers and exporters during the season.

The raw lac is a resinous incrustation produced round the bodies of colonies of the lac insect (*Tachardia lacca*) after it has fastened on the twigs of various trees, of which the most important as lac producers in this district are the Kusum (*Schleichera trijuga*), the Palas (*Butea frondosa*) and the Bair or Kul (*Zizyphus jujuba*). The production of the lac of commerce commences with the birth and swarming of the larvæ which occurs twice or occasionally three times in the year, viz., in July, December and January. The larvæ emerge from the dead bodies of the female and crawl away in quest of fresh feeding grounds covering the adjoining branches and twigs till the latter look red and literally alive. In this stage they have numerous enemies and the vast majority perish; the more fortunate are wafted by the breeze or carried by the bees, birds or squirrels or by their own exertions to new situations. There the larvæ become fixed, their legs no longer required fall off, and a resinous excretion begins to form round their bodies, and in course of time, by the aggregation of many, the twigs become more or less completely and thickly encrusted. Two and a half months after swarming the insects are produced, the females have no power to locomotion and remain in the cells, the males emerge winged and fly and flutter away visiting and impregnating the females. Shortly afterwards, the bodies of the females become greatly enlarged, assume a bright red colour and in the due course develop viviparous larvæ. The mother then dies, the body becomes the resting place of her numerous offspring (about 1,000 in number) which at their appointed time escape by swarming, and thus twice or sometimes thrice in the year the strange cycle of life is repeated.

The system of propagation or cultivation ordinarily followed consists in lopping off a few twigs of well-formed lac shortly before the expected date of swarming, and tying these in convenient portions on fresh trees or fresh boughs of the same tree. In the case of the Bair, and to a certain extent also Kusum, it is the practice now to regularly pollard the tree so as to encourage vigorous growth of new branches and twigs on which to propagate the lac; in the case of Kusum the seed in the shape of an old branch, well encrusted, is applied to the fresh tree or branch in the month of Māgh (January-February); a bundle of seed twigs a foot or so in diameter and costing about five rupees, suffices for four trees. The principal crop in the case of Kusum is gathered in Kartik (October-November), but a smaller crop called 'Jethua' is also cut in Chait (March-April). The encrusted branches are removed entirely and the lac scraped off; the produce of an average tree weighs about 30 seers, including a comparatively small amount of wood and bark; the quality depends on the brightness of the colour and the thickness of the incrustation, which is often as much as one inch, completely encircling the twig.*

Palāsi and Kul lac are reckoned inferior to Kusum, and of the two Kul is of slightly better quality but involves more cost in cultivation. The method of application is much the same. The principal crop is in Baisākh (April-May) when the twigs are lopped off and the lac removed with a sickle, the twigs in the case of Kul being first soaked in water to facilitate this operation. Palāsi lac reaches the market as a rule with a larger percentage of wood, and indeed much of it still attached to the twigs, and the price is in consequence lower. A second crop is taken from the Palās, on which a part of the earlier crop is usually left as seed, in Kartick (October-November) and is known as 'Chuchia' when it is cut and sold as seed. 'Chuchia' or seed lac is not left on the Kul, for which seed from the Palas is ordinarily used. The yield from a Kul tree of average size may be taken as 20 to 25 seers, and from the Palās slightly less. The risks attending the cultivation of lac generally are considerable. Excessive heat in March or August is said to be fatal to the seed; fog or mist is supposed to damage it, and cloudy weather accompanied by thunder and lightning to injure or even destroy the crop. In May 1908 the comparative poorness of the outturn was ascribed to excessive heat which had literally melted the incrustations on the branches, but a more probable explanation of the shortage was the large prices obtainable in the previous year, which led to an insufficient quantity being reserved for seed.

The price obtainable by the cultivator varies between very extreme limits according to the quality of the lac, its comparative purity from foreign matter in the shape of bark and wood, and the market for the manufactured article. In the specially favourable season of 1907 Kusumi lac fetched as much as Rs. 70 per maund in the local market, Palāsi Rs. 50 and Kuli Rs. 70, the demand for Europe and America being at that time enormous; in the two succeeding years prices dropped and the average did not exceed Rs. 25, Rs. 20 and Rs. 25 per maund for the three varieties respectively. At Rs. 20 per maund it is calculated that the cultivator can make a profit of Rs. 7 per tree with a produce of Rs. 20 seers per tree and seed lac selling at Rs. 5 per bundle, and allowing for payment for assistance in applying the seed, watching the trees and gathering and preparing the crop for the market; where all this is done by members of the cultivator's family the actual cash profits will of course be considerably higher. Even with lac selling at Rs. 10 per maund, the profit per tree is still considerable, though the margin is not large where hired labour has to be prepared and seed to be purchased.

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* The Commercial Products of India. Sir George Watt, London, 1908.

The process of manufacture followed in most of the factories is as follows: the raw lac is first crushed on a flat stone, and as much as possible of the woody material removed; the crushed lac (*bûnti*) is then made over to the *ghasandārs* (literally those who rub) who put it in earthen jars called *athālis* in which they wash and rub it between the palms of their hands or trample it with their feet. More of the foreign matter is thus removed and also the colouring matter, the water being constantly changed until it comes away comparatively free of dirt and colour. The lac itself is in the course of this process converted into what is known as seed lac, and is divided out into large and small grains, called respectively *chauri* and *mulāma*. The washing process is done either with or without *saji māti*, *i.e.*, impure carbonate of soda, the use of which gets rid of a larger percentage of the dye or colouring matter, and results in a more valuable quality of lac. After the washing and separation of the grains these are spread out and exposed to the rays of the sun to dry; over-exposure results in blackening of the lac and consequent reduction in value. When dried, the grains are winnowed to get rid of dust and dirt. A certain quantity of powdered yellow arsenic is mixed with them, the object being apparently to improve the colour; resin is also added partly as a cheap form of adulteration and partly because it makes the melting point of the shellac lower, and therefore makes it more suitable for certain purposes. Thus prepared the lac is made over to the regular shellac manufacturers (*kārikars*) who are mostly skilled workers from Mirzapur. They proceed to stuff the grain into long cylinder-shaped bags; one end of the bag is then attached to a *chorki* or wheel, not unlike a spinning wheel, placed close to a long open fire, and the other is held by the *kārikar*. The wheel is revolved and the surface of the bag gradually heated all round, and as the *kārikar* from time to time gives his end of the bag a complete twist round, the melted lac gradually exudes on the surface. In this state the lac, known as *pak*, is removed with a piece of flat iron and dropped either into a vessel of hot water or on to tiles kept wet and clean alongside the fire. The next stage is the conversion of the lumps of cooked lac into sheet or shellac; the lump, still hot, is taken by another workman and spread smoothly round a cylinder of wood or iron, or the stalk of a plantain the smoothing out is done with a ribbon of palm leaf stretched between the hands and is continued till the lac is a smooth sheet about one-eighth of an inch in thickness. The sheet is then opened out by a *belua* or opener and removed from the cylinder and trimmed into rectangular form, when another assistant carrying it in front of the fire seizes it with his hands, toes and even his teeth and spreading his arms and legs and straightening himself out stretches it to three or four times its original size and to the thinness of paper. It is then laid on a mat or cloth and allowed to cool gradually. The sheets thus prepared are carefully examined, all pieces of darker colour or containing impurities broken off and put away separately, and the remainder, broken into pieces two or three inches square of uniform clear golden colour, is ready for the market as first class shellac. The other forms in which lac is put on the market are as garnet, button or refuse. For garnet lac, which as its name implies is a rich red colour and is in demand where colour is not a disadvantage, the palási lac is largely used as well as the rejections at the different stages of the manufacture of shellac. The manufacture differs only in the fact that the process is complete at the cylinder stage, no further stretching being necessary. For button lac the molten material is not stretched at all but is simply allowed to drop off from the bag in which it is cooked on to a smooth clean surface, where it forms round pieces about 3 or 4 inches in diameter.

The bags used in the process above described contain a considerable residue of lac of which part is extracted by boiling with *saji* and made into cakes called *pasheba* which sell at somewhat less than half the rates obtainable for shellac and which are used mainly in the local manufacture of lac ornaments, bangles, toys, etc., and common sealing wax, and also by cabinet makers for covering up cracks in wood.

For lac dye there is now practically no demand, and no attempt is made to recover it from the water used for washing the raw lac in the earlier stages of manufacture. This water is allowed to run to waste and incidentally its disposal is a constant source of trouble in the factories within the municipal towns and larger villages, as it contains a large amount of both animal and vegetable refuse and has a most objectionable odour. The system now being enforced on manufacturers so far as possible is to run off the water to some distance from inhabited areas in pucka drains, and then to allow it to spread out over level fields; the earth saturated with the refuse water forms a valuable manure and cultivators regularly dig it out and put it on their fields, not infrequently paying small sums to be allowed to do so.

The finer qualities of manufactured lac, shellac, garnet and button are exported direct for the most part to Calcutta; no attempt has yet been made to convert any part of it locally into varnish, though in the mahua tree, which is usually abundant in this district in the very areas from which the raw lac is drawn, there is ample material for the distillation of a cheap spirit suitable for use in conjunction with lac in the manufacture of varnish.

Silk and Tasar weaving.

Tasar silk weaving is still carried on at a few centres of which Raghunāthpur (3 miles west of Adra station on the Bengal-Nagpur Railway) is the most important; Singhbazar near Purūlia and Lohāgarh, 15 miles south-east of the same place, each contains a few looms, the total number of families engaged in the industry is about 150, and in 1907-08 there were reported to be 95 looms. The estimates of outturn are only approximate and range from 32,000 yards in 1905-06 to 20,000 in 1907-08 Raghunāthpur appears to have been the chief centre of the manufacture in earlier days, but the industry has declined, since, it is said, the forests from which the cocoons were locally obtained have disappeared, and it is necessary now to go to a distance for these; the cost of the raw material is thereby enhanced, and as the profits of manufacture are reduced, many of the weaving families have had to take to other occupations. The quality of cloth produced at Raghunāthpur is good and there is a small local demand for it for *dhutis*, *saris*, *chadars*, napkins and *pagris*, but the bulk of the outturn finds its way to Burdwan and Calcutta. Attempts were made for several years to teach improved methods of manufacture and to adopt the fly-shuttle loom; the innate conservatism of the leading weavers was not, however, to be overcome, and neither in the methods of winding the cocoon nor in the method of weaving has any material improvement been effected.

Tasar rearing is still carried on fairly extensively in a small area near Kenda about half-way between Purūlia and Mānbazar; the rearers are chiefly Kurmis but Sonthals, Bhumij and others also go in for it. The Asan (*Terminalia tomentosa*), Sidha (*Lagerstrœmia parviflora*) and Dhau (*Anogeissus latifolia*) are the trees ordinarily used for rearing *dābas* and the Asan only for *bugais*.

Cotton weaving.

Cotton weaving other than as a home industry, *i.e.*, production on a small scale for merely local consumption, has almost disappeared; there are now no great weaving centres or large colonies of weavers, but in almost every village a few weavers will be found who prepare the coarse country cloth used by the poorer population for the ordinary articles of clothing; the cloth produced is coarse but strong and durable and is preferred to the more showy but less durable Manchester goods which are available in any quantity at every bazar and *hât* throughout the district. Formerly locally grown cotton was used, and in the wilder areas the aboriginal races still grow their small patches of cotton, but generally speaking the bulk of the cotton used is imported. Attempts have been made to introduce the fly-shuttle loom at Raghunâthpur where cotton as well as Tasar weavers are fairly numerous, but these have not been successful. At Pokhuria in the north of the district Dr. Campbell has been more successful, weaving is taught in a regular school and various improved looms are in use. The object of this school is primarily to teach the Sonthal to be entirely independent of the outsider and to have in every Sonthal village a few Sonthal weavers able to supply the local requirements; no attempt is therefore made to teach anything but ordinary coarse work.

Ironware and cutlery.

The ordinary iron utensils required for domestic use are made locally throughout the district; the ordinary village blacksmith works in a very primitive method and the produce of his hearth and anvil has no pretensions to being fine work; the raw material is usually supplied by his customers and he makes it up to order to the best of his ability. In Purūlia, Jhalda, Tanasi and one or two other places, however, theer are more skilled workers, and the two former places have a considerable reputation for the manufacture of agriculturla implements, cutlery and firearms.

The reputation of Jhalda for guns hardly compares with that of Monghyr and the outturn is now very limited, two or three per annum only; the industry was, however, at one time a flourishing one, and the gun-makers of both Jhalda and Tanâsi were suspected in 1857 of supplying matchlocks and other weapons to the discontented Sonthals and others who gave trouble in the neighbourhood of Jaipur and Gola. The manufacturers have not, however, lost their skill and can effect passable repairs of weapons of European manufacture and also turn out weapons which are a fair imitation, so far as appearance goes, of the cheaper products of Birmingham. Their methods differ in no material respect from those followed by the gun makers of Monghyr which are described in detail by Mr. E. R. Watson in his Monograph on Iron and Steel work in Bengal (1907). Sword-sticks (*gupti*) are also manufactured in considerable numbers, as well as similar walking sticks of various patterns without the concealed weapon. The bulk of the outturn of the smithies consists, however, of ordinary household and agricultural implements of somewhat superior workmanship to those produced by the regular blacksmith of the smaller villages. The technical schools at Jhalda and Tanāsi referred to elsewhere are in connection with the superior blacksmiths' shops, and boys mainly of the regular blacksmith or Lohar castes are taught the various stages in the working up of the rough material into ploughshares, *kodālis*, axes and the smaller cutting instruments in ordinary use. According to Mr. J. G. Cumming,* the workers at Jhalda are capable of doing much better work than he found them doing, and only require an extended market for their manufactures. It is doubtful, however, whether without a capitalist behind them there is much possibility of their obtaining this.

Stone-carving.

The only survival of the art of stone-carving, which to judge by the many relics of ancient skill to be found in the ruined temples scattered about the district, must at one time have had skilled exponents, is the small industry carried on at Dalmi and one or two other places in the south of the district, where the local pot or soap-stone is quarried on a small scale, and plates and other vessels manufactured from it. The number of people employed is small, a few dozen families in all and among these only a few individuals are skilled workmen. The blocks of stone are roughly dressed with a hammer and chisel, and then put on a rough lathe on which they are turned to the desired shape, and finally polished by hand. Occasionally somewhat more elaborate work is undertaken in the shape of idols, and it is stated that a few years ago some of the pot-stone masons were employed to do the carving for a new temple at Chirkunda. For such work, however, it is more usual to import skilled labour from Calcutta, Puri or elsewhere.

Gold-washing.

Gold-washing is an industry which still survives at a few places along the Subarnarekha river in the fiscal division of Patkum. The methods followed are primitive and the results are very small, a hard day's work being well rewarded if the outturn in gold dust is worth four or five annas.

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* Review of the Industrial position and prospects in Bengal in 1908.

Other industries.

Other industries call for no special description; workers in brass and bellmetal at Purūlia supply the ordinary local requirements in the way of vessels for household use, and gold and silversmiths, usually immigrants from the Bihar districts, manufacture the usual ornaments; the local pottery is of the most ordinary description, and neither wood turning nor wood-carving approaches anything in the shape of fine art. Basket-making is carried on for the most part by Doms and Hāris of whom a few may be found in most villages. Rope is made in the villages nearer the jungles from various jungle grasses and fibres; aloe fibre is also used, but the commonest material for ordinary purposes is rice straw.

TRADE.

Coal is of course the most important article of export, followed closely in point of value by lac; a long way behind these both in quantity and value come rice, paddy, gram and various pulses, in all of which, however, a comparison of the figures for the last two quinquennial periods (ending March 1905 and 1910 respectively) there is a tendency to decline, due largely no doubt to the rapidly increasing industrial population of the coalfield area, and the diminishing area available there for cultivation. The extent of the lac trade has already been referred to; its financial importance to the district may be inferred from the fact that, taking the lowest computation, the value of lac exported in 1909 was approximately 40 to 50 lakhs of rupees as compared with 150 lakhs for coal and 3 lakhs for all kinds of food-grains. The chief imports are food-grains, namely, rice and pulses, sugar, refined and unrefined, salt, English and Indian cotton piece-goods, and Indian cotton-twist, tobacco, and kerosine oil. The bulk of the exports go to Calcutta, though coal in large quantities goes to Bombay, the United Provinces and other Provinces, and a considerable quantity of raw lac to Mirzapur. Bihar and Burdwan take the bulk of the exports of rice, and Rānchi and Singhbhum the various pulses. Of the imports the bulk of the rice comes from Burdwan, Bankura, Singhbhum and Sambalpur, and of gram and pulses from the Bihār districts and Rānchi. Burdwan and Bihar share in providing most of the raw sugar and tobacco; oil-seeds come principally from districts of Bihar and other districts of Chota Nāgpur; raw lac in considerable quantity comes from Rānchi and Singhbhum and the bulk of the remainder of the imports come direct from Calcutta. The chief centres of trade are the towns of Purūlia and Jhalda, Dhānbaid, Jharia, Kātras and Chirkunda in the north of the district, Balarāmpur and Chāndil in the south, all on the line of railway, and Mānbazar and Barabāzar in the east and south-east, The Dhānbāid subdivision is particularly well served by railways, the Purūlia subdivision not so well, but the Asansol-Sini line intersects it from north-east to south-west almost centrally, and the western half is again intersected since 1908 by the Purulia-Rānchi line; the Kharagpur-Gomoh branch cuts across the north-eastern corner and connects up the rest of the area with both Calcutta and the coalfield. Communications by road are on the whole good; passable fair-weather roads connect all parts of the district with one or more railway stations, and the main routes are metalled with either stone or gravel. The one existing drawback which hampers trade at all times and periodically stops through communication in the rains is the large number of unbridged rivers and streams. Outside the places mentioned there are comparatively few permanent markets, and the bulk of the ordinary trade of the district is carried on by means of the weekly *hāts*, many of which are held at places more or less intermediate between the distributing centres and the rural areas which they serve. In the wilder parts of the district pack-bullocks are regularly used as the only suitable means of conveyance, and the travelling purveyor of Manchester cloth and other village requirements or luxuries is no uncommon sight. For the purchase of the products of the rural areas agents are sent out from the chief centres to the *hāts* and villages and much of the produce, more particularly such articles as grain, oilseeds, hides, etc., for export, are thus bought locally; lac and other forest produce is usually brought in to the larger *hāts* and to the places of manufacture. Inter-district traffic by road with the southern and western portion of Rānchi is considerable, Chāndil being the main distributing and collecting centre, and a great part of the produce of the south-eastern corner of the district finds its way to various stations on the Bengal-Nāgpur Railway in the Singhbhum district. In the west Jhalda, which is now connected by a good road with Gola, does a large amount of trade with the south-eastern portion of Hazāribāgh; in the extreme north there is a considerable inter-district traffic betweeen Tundi and the Sonthal Parganas, gram and straw from which as well as timber from Pālganj in Hazāribāgh find their way in large quantities to the coalfield by road.

Weights and measures.

The extension of the coal industry and the opening out of the district generally, which has resulted from it, has naturally led to the standardisation of weights in the district. In the larger markets and generally at most places within reach of the railway the only weight in use is the standard seer of 80 tolas. In the more out-of-the-way parts, a seer varies from as little as 60 to as much as 112 tolas in Mânbazar. south-eastern Barâbhum, Baghmundi and elsewhere. Actual transactions, when dealing retail, are usually by measurer bowls supposed to hold ¼ seer (*powa*) or a seer (*paila*) being used to measure grain.

The standard cubit for all ordinary purposes is one of 18 inches; smaller units are the *anguli* or thumb breadth, the *mushtis* of 4 *angulis*=three inches, and the bigha equal to three *mushtis*. Five *hâths* in length by four *hâths* in breadth makes a chittak of 45 square feet land measure, 16 chittaks equal 1 katha, and 20 kathas one bigha. Divisions of time are but vaguely recognised by the rural population, a *ghari* is about 24 minutes, a *ghanta* approximately an hour, and a *prahar* three hours *Duprahar* represents midday. Other times of day are usually marked by reference to this or to sunrise or sunset or to the regular meals.

CHAPTER IX.

THE COALFIELDS OF MÂNBHUM

Early discoveries.

THE first Englishman to discover the existence of coal in Bengal was probably Mr. Suetonious Grant Heatly who, in 1774, was the Collector of Chotâ Nāgpur and Palamau. In that year he and a Mr. John Sumner obtained from Warren Hastings a license empowering them to work coal mines in "Pachete and Birbhum" A Mr. Redferne subsequently joined the firm which, as Sumner, Heatly and Redferne, applied for and obtained the exclusive right for a period of 18 years to work and sell coal in Bengal and its dependencies. In addition to paying a Government royalty of one fifth of the value of all the coal raised by them, they also agreed to supply Government with ten thousand maunds of coal a year for a period of five years. Under this agreement the firm in 1775 announced the arrival of 2,500 maunds or 91½ tons of Pachete coal and asked that it should be taken over. This appears to be the first occasion on which Bengal coal in any large quantity was brought into the market. The coal, however, was not taken over until 1777 when, upon a second application from the firm, the Commissary of Stores was directed to examine and report upon it.

In 1777, about the same time, Farquhar and Motte asked permission "to bore cannon and to cast shot and shell in the district of Jherria, lying between the rivers Dammuda and Barakar." They gave as their reason for the selection of that locality that it "abounds in iron ore and is contiguous to the coal mine of Messrs. Sumner and Heatly." Unfortunately the coal Heatly produced was reported as being much inferior to that of England. In fact the Commissary of Stores, as the result of a series of experiments, came to the conclusion that it was only half as good as English coal, and it was returned to the firm. This circumstance, together with the indifference of Lord Cornwallis to measures calculated to develop the internal resources or promote the external commerce of India, led to the neglect and apathy that characterised the first few years of coal mining in India. Mr. Heatly was afterwards transferred, and it is doubtful whether any more of the coal was actually brought into the market. The mines first worked by him are said to have been six in number, three of which were at Aituria, Chinakuri, and Damulia, and the others further west near the Barākar. In his Wild Sports in the East (1808), Williamson alludes to Indian coal, but says that the Company "finds it easier to send coal from England, as ballast, to their arsenals abroad, where quantities are occasionally used in fusing metals for casting ordnances." But none of the early European travellers in India make any mention of coal, prior to the first decade of the 19th century. This is abundantly exemplified by the silence of Milburn (Or. Comm., 1813) and of Macpherson (Hist. Europ. Comm. Ind., 1812), two authors who were certain to have had chapters on Indian coal and India's requirements in coal had these been questions of public importance at the time in which they wrote.

In 1808 the Indian Directors of the East India Company actually complained of the heavy charges involved by the indents for coal made by their Indian representatives, and they accordingly recommended an enquiry whether charcoal could not be substituted; and if not, they further recommended the transference of the ordnance works to England. The Earl of Minto, who was at the time Governor-General of India, directed that Indian coal should be submitted to actual tests by the military authorities in India, and further experiments were accordingly made by Colonel Hardwicke. His report, however, which is dated May 19th, 1809, was again very unfavourable, and the subject of coal for a time dropped out of notice. But in 1814 the Marquis of Hastings once more urged on the Military Board the desirability of ascertaining beyond doubt "whether the coal of India was of a quality calculated for the purpose of the forge." He also announced that a fully qualified person would be appointed to examine the mines, who would be furnished with the necessary apparatus to make borings and who would for experimental purposes procure a supply of coal from such a depth as to ensure that it would represent the average quality. Previous experiments where thus discredited owing to the coal used having been obtained from the surface and therefore much deteriorated.

By this time apparently coal was being regularly conveyed by boat down the Dāmodar river to Calcutta, and we hear of a Calcutta merchant having commenced to use Bengal coal notwithstanding the unfavourable reports published by the Military Board.

Mr. Rupert Jones' enquiry.

The expert deputed by Government was a Mr. Rupert Jones who was sent from England on purpose to examine the Bengal coalfields, and his report (written in 1815) will be found in the

Asiatik Researches (1833, XVIII, 163-70 . Mr. Jones rediscovered Mr. Heatly's workings and also found the seam at Rānīganj, which later in 1815 or 1816, he began to work on his own account. His report was on the whole favourable and showed that Bengal coal might very well be used for many of the purposes for which English coal was being imported. But he did not himself realise the full value of his investigations. He foretold increased prosperity to Calcutta through the coal he had discovered being a better and more economical fuel for burning the Sylhet limestone than the firewood then in use, but apparently he knew little of the great revolution steam was destined to effect, nor of the imperative necessity of an abundant and cheap supply of coal for commercial and industrial prosperity.*

Early developments in Mānbhum. The Rānīganj field.

The history of Mr. Jones' undertaking at Rānīganj belongs to the Burdwan district, but barely 10 years after Messrs. Alexander and Company took over his workings and started the first regularly constituted Indian mine under European supervision and worked by European capital in 1820, Mr. Homfray of Messrs. Jessop and Company opened the Chānch and Luchibad mines at the other end of the Rānīganj field west of the Barākhar river and within the present limits of this district. In 1837 these mines with others passed into the hands of Messrs. Gilmore, Homfray and Company, and six years later in 1843 this firm and that of Carr, Tagore and Company, who had acquired the Rānīganj mine in the Burdwan district, combined to form the Bengal Coal Company which still owns the most extensive coal properties in the Rānīganj field. Progress was, however, slow until the opening of the East Indian Railway as far as Rānīganj in 1854, and so far as mines in the Mānbhum portion of the Rānīganj field are concerned until its extension to Barākar in 1858. A return of production submitted in 1860 shows three collieries working within the present limits of the district, i.e., Chānch, Luchibad and Domurkonda, with a total outturn of 4½ lakhs of maunds for 1858 and 3½ for 1859. In 1861 Mr. Blanford of the Geological Survey saw quarries being worked at these three places and also at Hirākund, and in a few other places surface coal was being quarried on a small scale by natives; at Domurkonda development had gone to the extent of the installation of a steam engine of 10 horse-power. But with no outlet to the rail-head and to the consuming centres except by road or in the rains by the somewhat uncertain route of the Dâmodar river, which does not in this district or for some distance further east lend itself very readily to regular boat traffic, development was very slow, and as late as 1868, the report on the "Coal Resources and Production of India" states that a single mine with a yearly output of 1½ lakhs of maunds was being worked west of the Barâkhar river. Though the East Indian Railway line was opened as far as Barâkhar in 1858, it was not till 1870 that the road bridge over the Barâkhar river was completed, and another 24 years elapsed before the Barâkhar railway bridge and the Chânch branch, a purely colliery line connecting the collieries at Chânch, Luchibad, Domurkonda, etc., with the main line, were opened in 1894. Even as late as 1891 the only extensive workings in this part of the field were those of the Bengal and Barâkhar Coal Companies at Laikdihi and Kumardubi respectively, and the total output in that year was only 77,000 tons. Though, therefore, coal mining within the district of Manbhum in the Rañiganj field was initiated so many years before, it can only be said to have got its full opportunity of development almost at the same time as the Jharia field was brought into touch with the outside world by the opening of the Barâkhar-Dhânbâid line in 1894.

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* This and the preceding paragraphs are reproduced from the Burdwan Gazetteer, J. C. K. Peterson, 1910. Ed.

The Jharia field.

It has already been mentioned that so far back as 1777 Farquhar and Motte had asked permission to bore cannon and cast shot and shell in the district of Jharia, which they describe as "abounding in iron ore and as contiguous to Sumner and Heatly's coal mines." The latter, however, were east of the Barâkhar, and it is probable that Farquhar and Motte referred rather to the eastern part of the Rãniganj field which answers their description in other respects than to the Jharia field proper. Mr. Jones, in a paper written in 1817 and published 10 years later, referred to coal in the neighbourhood of Jharia or "Jarrigarh," but the map which accompanied it did not include the Jharia field. It was Major Sherwill, the officer in charge of the party which did the Revenue Survey of this part of the district in the years 1861 to 1863, who once more brought to notice the existence of coal in Jharia. An application had indeed been filed a few years earlier (1858) by Messrs. Borrodaile and Company for a mining lease of the whole Jharia estate which was then under Court of Wards management, but nothing came of this. Major Sherwill's information led to the deputation of Mr. Theodore Hughes of the Geological Survey, as soon as the topographical maps were ready, to make a proper examination of the mineral resources of this area, and his report was made public in the Memoirs of the Geological Survey of India in 1865

(Vol. V, Part III). An optimistic view of the quality and future of Jharia coal was not, however, taken by Mr. Oldham, the Superintendent of the Geological Survey, and no steps were taken to exploit it till 1890, when the East Indian Railway Company deputed Mr. T. H. Ward to make a definite report on the economic resources of the field. Mr. Ward's report was a most favourable one. He considered the Jharia coal superior to the general average of the raisings in Rānīganj field, and was sanguine that with good railway communications it would command the north-west market. The construction of a railway line from Barākhar to Kātras was sanctioned in April 1892 and taken in hand at once, and there was an immediate rush for settlements of coal lands in Jharia. The estate was just then about to be released from management, and the Court of Wards declined to undertake the responsibility of making any settlements with the result that the earliest mines to be opened were some near Kātras. The new line from Barākhar to Dhānbāid and Kātras was opened on the 20th May 1894, and a year later another line from Kusunda to Pathordi, and the whole length of the coalfield was thus brought into direct communication with the outer world, and the result was an immediate and rapid development of the industry. In 1894 the outturn from all mines in the district was only 128,686 tons; in 1895 it rose at once to 1,281,294 tons, the enormous increase being almost entirely from the Jharia field. In the two succeeding years there was a set-back, but from 1898 there was a steady rise in the outturn which first touched two million tons in 1901. In 1905 the outturn had swelled to nearly three million tons, and in 1906 to nearly four millons; in 1907 over 5,800,000 tons were raised, and in the following year no less than seven millions of tons. These figures are, by themselves, sufficient to show the extraordinary rapid development of the coal industry in the district; the Jharia field is of course the one which accounts for the bulk of the increase in outturn, but since 1894 there has been a very considerable expansion in the Rānīganj field also, and many new mines have been opened out, more especially along what is known as the Pāndra extension of the field and also south of the Dāmodar river, where the famous Deshargarh seams have been worked by the Equitable Coal Company at Chaurāsi since 1902. The entrance of the Bengal-Nāgpur Railway in the Jharia field in 1904 and the subsequent extension of various loops and small branches, besides innumerable sidings from both Railway systems, the doubling of the line from Barākhar to Dhānbāid, the opening of the section of the Grand Chord of the East Indian Railway from Dhanbaid to Gomoh in 1907, have all facilitated rapid development, and at the present time it may be said that every part of the field, including the extension on the west towards the Rāmgarh Bokaro field which almost immediately joins on to the Jharia field across the Hazāribagh border, has been brought into close touch with the railway and by means of it with the outside world. The tendency, however, which was manifest in 1907 and 1908 to open out new collieries in this part of the field, and also in the continuation of the main field south of the Damodar, has for the time being been checked. From two concerns representing some half a dozen mines, working in 1891 the number of collieries in the district has grown to 281 in 1908, 222 in the Jharia field and 59 in the Rāniganj field, producing 6½ millions and 650,000 tons respectively, or more than double the output of the Burdwan mines in the same year and nearly seven-twelfths of the total output of British India. The value at the pit's mouth represented over 2 crores of rupees or nearly 1½ millions sterling, and the number of work-people employed amounted to an average of 72,000 persons daily.

Geology of the Jharia field.

The geology of the Jharia field is thus described by Mr. Hughes. Two series are developed,—the lower the Tālcher, and the upper the Dāmodar,—comprising a total thickness of 6,800 feet of strata, and forming a trough or basin, the beds usually dipping at right angles away from the boundaries, at varying amounts towards a common centre of depression. A large and well defined fault, possibly continuous and directly connected with the one that forms the southern boundary of the Rānīganj field, cuts off the whole of the beds to the south, throwing them several hundreds of feet The Tālcher series is easily recognised by those peculiar mineral characters which serve so readily to distinguish it, where developed in neighbouring localities A "boulder-bed" occurs at the base, and above it are flaggy green shales and mammillated sand-stones, the former of which may be considered the distinctive rocks of the series. The Dāmodar series is characterised by its containing coal, by the mineral composition of its beds and by the nature of its flora. In subdividing it, I have followed the classification and nomenclature first introduced by the Geological Survey of India in the Report on the Rānīganj field:—(1) Barākhar group at the base, (2) Carbonaceous shales with iron-stones, and (3) Rānīganj group. In the present instance, however, there is no evidence of decided unconformity between any of the above three groups, and my divisions are based entirely upon lithological grounds. Even this test, however, almost fails with respect to the carbonaceous shales with ironstones, as they are not developed to such an extent in the Jharia district as in the Rāniganj field; and in many instances the ironstones are altogether wanting in the shales, so that they wholly loose their distinctive character. No formation higher than the two above mentioned occurs, and the Pânchet rocks (the next in order of succession above the Dâmodar), which possess such a splendid development at a distance of only eighteen miles to the east in the Rāniganj field, have been removed from this district, so that no vestige of them remains This phenomenon is no doubt in great part due to the fact that the southern boundary has not been thrown to the same enormous extent as that of the Rāniganj field, although connected with it; and that, therefore, the Pânchets were less protected and more easily swept away by the denuding forces that acted against them. The metamorphic series, composed mainly of gneiss and constituting the bottom rocks of the country, is represented by a large inlier in the neighbourhood of Dumra, which must have been an island in the old Talcher sea at the time when the sedimentary substances which formed that group were being deposited, and doubtless furnished some of the material which we now see piled up against its old shores. The most common varieties of rock are syenitic and porphyritic gneiss, but another very prevalent form is a binary compound of quartz and felspar. The last element is very subordinate, and as the grains of quartz are by no means sharply crystalline, this peculiarity when the rock is much weathered,—and it occurs near the boundary of the coal measures,—often at first leads one to the very natural supposition that it is an unaltered silicious sandstone.

With the exception, then, of the middle series, coal is found at all depths in the Dāmodar series, the larger seams generally being at the base, while those occurring at the top are smaller. The excellence of the coal in the Rāniganj group of the Rānīganj field is well known; but in the Jharia field, although there are many seams in the upper series superior to some in the Barâkhars, the finest coal and the freest from ash occurs in the latter.

Mr. Ward traced out altogether 17 seams upwards of 5 feet in thickness within the Barâkhar group. In the main central area these measures dip at an angle very moderate from a miner's point of view of 10° to the south, whilst on the flanks east and west the dips increase to 30° and 40°. In nearly every case the seams are overlain by a roof of sandstone. The seams numbering 14*a*, 15 and 17 contain first-class coal; their characteristic thicknesses are 7½, 25 and 10 feet respectively. No. 14, which is a very fair coal, is unfortunately spoilt over large areas by intrusions of trap Mr. Ward estimated the net quantity of coal of No. 13 seam which he considered among the best, at 730 millions of tons, of which 159 million tons are at depths less than 800 feet.

In the Barâkhar series eighteen well-defined seams are now recognised, of which, according to Sir T. Holland, the upper eight seams include enormous supplies of good coal; such seams as there are of the higher beds of the Dâmodar series have for the most part yielded poor coal. "The two classes of coal present a well-marked and constant difference in the amount of moisture they contain; the older, Barâkhar coals, both in the Rânīganj field and in Jharia, contain on an average about 1 per cent. of moisture, whilst the average for the younger coal of the Rânīganj series is 3·8 per cent. in the lower seams, and nearly 7 per cent. in the upper seams. There is a corresponding, but less marked, difference in the proportion of volatile hydrocarbons, which form a larger percentage of the younger coals than of those at lower stages in the Dâmodar series." (Sir T. Holland.)

Composition.

The results of certain assays of coal and coke made by Mr. E. P. Martin and Professor H. Louis of carefully procured samples from the Jharia and Rāniganj fields are thus summarised by Dr Watt.

Coal.	Fixed Carbon.	Volatile matter.	Sulphur.	Ash	Moisture	Lb. of water evaporated by 1 lb. of coal.
Jharia field (12 samples).	60·5	22·0	0·55	16·49	1·0	12·71
Rāniganj (4 samples).	52·81	31·43	0·47	14·10	1·68	12·88

Coke.	Carbon.	Sulphur.	Phosphorus.	Ash.	Moisture.
Jharia coke (9 samples).	75·16	0·65	0·17	24·64	0·48

Commenting on these results, Sir T. Holland observes: "The beds in which the coal is now being mined in the Jharia field were long ago correlated by the Geological Survey with the

Barākhar series of the Rāniganj coalfield, and it is interesting to notice that the low percentage of moisture recorded by Saise in the coal of the Barākhar series in the Rānīganj field is characteristic also of the Barākhar coal in the Jharia field In the case of the Barākhar coal from the Rānīganj field the moisture amounted on an average to 1·0 per cent., whilst in the case of these Jharia coals the average for moisture is 0·90 per cent."

Method of working.

The methods of working are at the time of writing in a transition stage Up till very lately the miner, helped by the nearness of the coal to the surface, the slight inclinations of the seams and the excellent sandstone roofs above the coal, had been able to do his work with little knowledge or experience of real mining such as is known in England. Now that the workings are at lower levels and the profitable work of pillar extraction is being carried out, scientific mining is a necessity.

There are three methods in which mining is carried on in this area, (*a*) the coal is quarried, (*b*) brought to the surface along an "incline", or (*c*) raised up a shaft. Although no less than 88 mines were classed as quarries in 1909, yet as a matter of fact these have passed beyond the quarry stage and are worked by inclines from the original quarries. Inclines are open cuttings leading from the surface to the coal measures always near the outcrop. Usually they are furnished with rails up which tubs of coal are hauled. *Pit shafts are all circular and used to be made by hand.* In this way a depth of 60 feet through moderately hard sandstone could be reached in a month. Now there is a growing tendency to use machine tools for this work. The completed shaft has an unlined jagged surface save on the rare occasion when it goes through alluvium or faulty ground, but the guide ropes prevent any danger to the cages from the rough rocks.

When the shaft or incline has reached the level where work on the coal is to start, two series of galleries at right angles to each other (one series along the dip of the seam) are driven right up to the boundary of the area to be worked. All the coal is thus extracted except the pillars formed by the spaces between the galleries. These pillars support the soil above the coal and thus protect the workings. This method alone was employed in this field up till a short time ago. It involved the temptation to make the galleries as wide and the pillars as small as possible. In addition, the coal on the pillars being easy to extract, the coolies who are paid by the amount produced, naturally "robbed" the pillars whatever orders were in force. The excellent sandstone roof and the absence of explosive gas hid for some time the danger of these methods. Here and there, however, nature asserted herself and the weight of the strata has crushed out the weak pillars so that large areas, if not the whole of the mine, have been irretrievably lost. Such a system with 12 feet galleries and 12 feet pillars yields 70 per cent. of the coal, but the remaining 30 per cent. cannot be touched.

At present the tendency is to cut the galleries so that the coal in the pillars also may be extracted. With a view to this the galleries are driven 40 feet to 60 feet apart throughout the area to be worked. Then small galleries are driven through the pillars themselves, leaving slight columns of coal to support the roof. In time these columns are removed, working from without inwards until only the one nearest the remaining pillars is left, the roof meanwhile being supported by timber. The area of this pillar is then left, and sooner or later the roof falls in. Proceeding from the outer boundary of the property, the pillars are all extracted till the whole area is worked out. By this method quite 90 per cent. of the coal can be extracted, but great care is needed to guard against any workers being under or close to the roof at its fall.

For removing the coal dynamite is the explosive most in use. Blasting powder is used in only a few mines, but in many collieries all the work is done with picks as the coal is easily worked.

Owing to the absence of explosive gas, naked lights are used for lighting. Small kerosine oil lamps have quite replaced the indigenous *chirag* formerly in use, but they make the atmosphere unpleasant because there is seldom adequate ventilation. In only a few collieries has any attention been paid to ventilation, but when deeper levels are reached this must be systematically taken in hand.

The method of conveying the coal from the place of extraction to the railway waggons is still with one or two exceptions very primitive As the coal is cut it is gathered into wicker baskets and carried on the heads of the coolies (generally women) right up to the surface, where it is stacked or tumbled at once into the railway waggons. In some mines the coal is deposited in tubs at the mouth of the incline, and these are pushed by hand along rails to the railway siding. In others the tubs are filled in the workings and hauled up the inclines by steam power, four to eight at a time, or raised up shafts in cages. The rails often extend a considerable distance under ground, but there is always a long lead along which the coal has to be carried by coolies.

As indicated above, manual labour still bulks largely in the working of mines. Machinery is, however, coming more generally into use, and in 1903, 94 out of 222 mines in the Jharia field and 11 out of 59 in the Rániganj series were classed as worked by steam. In a few collieries only has electricity begun to take the place of steam-power, principally for pumping or driving new galleries, and it is probable that when the present depression in the industry passes and the demand for labour once more largely exceeds the supply, as was the case in 1907 and 1908, one or other of the various systems of mechanical cutting will be substituted for hand labour.

Labour. As in England, 100 years ago, the miners are still essentially an agricultural class Almost all of them are cultivators who are attracted to the mines by the high and constant wages and find there the means to satisfy their landlord and moneylender. As yet there are no hereditary miners. A large number of the colliers are aboriginals, and for underground work Sonthals, Mundas, Oraons and Kols are probably the best workers Semi-aboriginals and among them Bauris are largely employed both above and below ground, but almost all the local castes, which go in for any form of manual labour, are now represented in the mines. In a few collieries a number of Pathans and Peshwaris are employed and are said to be the best workmen; coolies from Bilaspur are also imported. Employment is not confined to the cooly himself, but practically every member of his family can get work of some sort Underground work is usually paid for at a fixed price per tub of coal, ordinarily 5 annas equivalent to about 7½ annas per ton. This rate includes not only cutting but loading into the tubs, but the latter part of the work is done by the cutter's family or other members of his gang; the latter also push the tubs to the main gallery from which they are hauled up the incline In ordinary circumstances a man can cut from 2 to 3 tub loads of coal in a working day of 8 hours, but one of the chief difficulties in colliery management is to get the coolies to do a full day's work, and even the most energetic will not work more than five days in the week while at the colliery, and will ordinarily go to their own homes for all festivals, as well as during the marriage and cultivating seasons. Surface labourers and others who are not paid by outturn can earn four to five annas per diem, women two to three annas, and boys and girls of 10 to 15 years almost as much. The gross earnings of a family may therefore be considerable. Unfortunately the desire to earn more than suffices to feed him well and enable him to get drunk fairly frequently is generally absent, and from the colliery manager's point of view the classes of coolies, who really work hard while on the colliery, as for example many of the Sonthals, are as trying as the rest because their periods of absence in their own villages, where they go when they have amassed sufficient to pay off the moneylender and redeem a field or two, are the longest. Sunday afternoon, after the morning distribution of pay, witnesses a considerable exodus, strings of coolies may be seen crossing the Grand Trunk Road making different short cuts to their villages in Tundi and the Sonthal Parganas; on other days small parties may be seen making their way back to the mines after spending their earnings or celebrating their local festivals or preparing their fields or sowing, transplanting or reaping their crops according to the season. Strikes are unknown and serious quarrels, when they do arise, are settled by the miners leaving the collieries for their homes. As a rule the supply of labour is less than the demand, hence the Managers, to keep what they have, must treat their workers well.

The methods of the workers are still more or less primitive; the average cooly prefers to fill his tub in the easiest and quickest way that suggests itself to him, quite irrespective of whether the results of his want of method may be fatal to himself or others. One of the most frequent causes of fatal accidents is the practice of what is called "robbing pillars," the miner surreptitiously hacking at the pillar and filling a few baskets on his way to his appointed place, where the same amount of effort will result in a very much smaller outturn in coal. Apart from this cause of accident, and accidents due to other forms of sheer carelessness on the part of the labourers above and below ground, accidents are few, though the death-rate figures for recent years show that there is a tendency to an increase in this respect. The most fruitful source of serious accidents in English mines, explosions of fire-damp, is almost unknown, and in very few mines has it been found necessary, as yet, to insist on the use of safety lamps. The only serious accidents of this kind that have occurred in this district were at the Laikdih and Chānch mines in 1907 and 1908 respectively; both of these are in the Rāniganj field and are among the oldest worked in the district.

The largest concerns now working in the district are the East Indian, the Eastern, and Gopālichak Coal Companies, the Indian Collieries Syndicate, the Lodna Colliery Company, the Rāniganj Coal Association, the Reliance, Sijua, Standard, Bengal, Bengal-Nāgpur, Equitable and Bhālgora Coal Companies, all of which employed a daily average of more than 1,000 labourers during 1908. The majority of the above are managed by European firms; the chief Indian firm owning or managing collieries is that of Messrs. Laik and Banerji, which was as a matter of fact one of the earliest in the field in Jharia.

Inspection.

The headquarters of the Department of Mines in India was removed from Calcutta to Dhânbâid on the 20th April 1909, and besides the Chief Inspector, one of the three Inspectors of Mines is resident there. The whole of the Jharia field is included in Inspection Circle No. I, and the Rânīganj portion with part of the field in the Burdwan district is in Circle No. II, the dividing line being one drawn from Adra at mile 175 of the Bengal-Nāgpur Railway to Gobindpur at mile 169 of the Grand Trunk Road. On the Chief Inspector and Inspectors rests the whole responsibility of seeing that the rules framed under the Mines Act are complied with; inspections in connection with sanitary and other arrangements are also made from time to time by the Deputy Commissioner, Subdivisional Officer, and Civil Surgeon.

CHAPTER X.

MEANS OF COMMUNICATION.

Development of means of communication.

TILL within comparatively recent times the district of Mânbhum was very badly served in the matter of means of communication both by road and rail, but the last 15 years has seen a very considerable development.

In 1854, so far as can now be ascertained, the only metalled road was the then new Grand Trunk Road, 43 miles of which, from the 149th mile at the Barākhar Bridge to the 192nd mile at the foot of Parasnāth hill, lie within the district. Mr Ricketts writing in that year refers also to fair-weather tracks, between Sili on the Ranchi border, through Purūlia and on to Bānkura, and from Purūlia through Raghunāthpur to Rānīganj, the terminus of the East Indian Railway. A road from Gobindpur, on the Grand Trunk Road, to Ranchi *via* Mahoar, about 4 miles north-west of Chās, and Gola in Hazāribagh, was also under construction. The alignment of the old Benares Road, which was not, however, metalled, passed through the district, from a point near Gaurāndi about 6 miles from the Bānkura border and 18 miles from Bānkura, to the Hazāribagh border, some 4 miles west of Chās. The semaphore towers still remain on commanding positions along this road to mark its previous importance as the direct military route between Calcutta and the North-West Provinces.

Between 1854 and 1874 Purulia had been connected by good, bridged (except for the Dāmodar river) and metalled roads with Barākhar (46 miles) and Rānchi, the Mânbhum portion of the latter road ending at the Subarnarekha river 35 miles west of Purūlia. The Chaibāsa Road, 40 miles in length, had been almost completed, and a direct road to Bānkura, about 28 miles, was under construction. Altogether it was at that time reported that there were 500 miles of road in the district, which, however, included at that time several Parganas which were afterwards transferred to Burdwan and Bānkura districts; within the present limits of the district the mileage was probably not more than

350, of which 215 only were under the management of the District Road Committee.

Roads. The latest schedules of the District Board show a total road mileage of 1,168 maintained by the District Board, besides 88 miles maintained by the Public Works Department. The whole of the latter, which includes 43 miles of the Grand Trunk Road and 35 of the Purūlia-Rānchi Road are metalled. Of roads maintained by the District Board 123 miles are metalled. These include 42 miles of the Purūlia-Barākhar Road which is a Provincial road, and some 26 miles of roads in the Jharia coalfield, besides various short lengths of Railway Station approach roads, and portions of several of the main routes. There are besides some 30 miles of roads, classed as unmetalled, in which the wheel tracks, two and a half feet wide, on each side of a central gravelled strip, three feet wide, are metalled. Of other unmetalled roads all the more important are surfaced with gravel, and more or less completely drained. Except on the Purūlia-Barākhar Road, the rivers and rivulets crossed are generally unbridged, but within the last few years causeways have been constructed over the beds of the smaller streams, crossed by the more important roads. The Dāmodar, the Katri, and the Khudiya rivers in the north of the district, the Gowai and Ijri in the centre, and the Kāsai, Kumāri and Subarnarekha in the south of the district are the only streams which cause any serious interruption to traffic; the Kāsai which runs within 3 miles of Purūlia makes communication with the whole of the south-eastern portion of the district very difficult during the rainy season, and its broad sandy bed is a considerable obstacle to traffic even in dry weather.

Railways. The East Indian Chord line was completed to Barākhar in 1858, and for the next 31 years communication with Calcutta and the outside world generally was *viâ* Barākhar or Rāniganj. In 1885 the Bengal-Nāgpur Railway Company started the construction of the Bilāspur-Asansol branch connecting their main Nāgpur line with the East Indian system, and this branch was opened in 1889. The line crosses the Dāmodar six miles south of Asansol, and for a distance of 83 miles traverses the district in a south-westerly direction, connecting Purūlia with Asansol, on the East Indian Railway, and with Sini and Chakrādharpur on the Bengal Nāgpur Railway.

In 1894 the East Indian Railway Company extended their system from Barākhar to Jharia and Kātras, so opening up the Jharia coalfield area. Nine years later, in February 1903, the Kharagpur-Gomoh section of the Bengal-Nāgpur line was opened to goods traffic as far as Bhojudih, and in the following year for goods and passenger traffic as far as Mulkera, the complete length to Gomoh not being ready till January 1907, this affording another outlet for the products of the coalfield. In February 1907 the Grand Chord of the East Indian Railway, which practically doubled the existing line through the coalfield and gave a direct outlet towards the North-West Provinces and Bombay, was opened. The most recent addition to the railway system is the Purūlia-Ranchi line on the 2'-6" guage, which was opened in February 1908; 36 miles of this railway lie within the district of Mānbhum, and afford an outlet for the grain and jungle products of the western portion of the district.

The collieries are served by a network of loops, branches, and sidings taking off from the main lines of both the Bengal-Nagpur and East Indian systems, and the inter connection of the two systems at Gomoh, Katrasgarh and Jharia makes it possible for the colliery proprietor to despatch his coal to any part of India by the most convenient route.

Extensions of the railway system.

Further extensions of the railway system are in progress or contemplated. A direct line from Pradhankhunta on the Grand Chord to Pathordih at the extreme south-eastern corner of the coalfield is under construction, the intention being to relieve the congestion of eastward bound traffic which at present has to pass through Dhanbaid. An extension of the Bengal-Nāgpur system from Khānudih in the extreme west of the Jharia field, through the Bokhāro Ramgarh field in the Hazāribāgh district, is at present under survey.

According to the figures supplied by the Agents of the Railway Companies, there are at present some 300 miles of open line within the district, of which 230 are available for both passenger and goods traffic, the balance consisting of special colliery branches Connected with the Bengal-Nāgpur system there are some 75 colliery sidings, and with the East Indian system no less than 160 with a total length of over 70 miles, and these are constantly being added to.

Rivers.

There are no canals or navigable rivers in the district. In pre-railway days the Dāmodar river was utilised during the rains for the despatch of coal, timber and other local products in small country boats or rafts, but the currents are so rapid and the bed so liable to changes that navigation was at all times difficult and dangerous, and now that railways provide safer and easier means of transport, practically no attempt is made to utilise this river.

Ferries. The District Board maintain ferries over the larger rivers during the rains, but the streams rise and fall with such rapidity that regular use cannot be made of them and the income obtained is very small.

Staging and Inspection Bungalows. There are dâk bungalows at Purulia and Tulin on the Purūlia-Rânchi Road maintained by Government, and on this and the Grand Trunk Road there are staging or inspection bungalows at approximately every 10th mile Bungalows and rest-houses are maintained by the District Board at the majority of the police-stations and also at convenient distances along all the more important roads These are ordinarily in charge of chaukidars, but at Bhâga (Jharia), Katras, Jhalda and Bâghmundi there are Khansâmas in charge.

Postal communications. There are altogether 56 post offices in the district, and 258 miles of postal communication The number of postal articles delivered in 1908-09 was 628,530, while the value of money-orders paid was Rs. 8,69,073 and of those issued Rs 27,55,189. The number of savings bank deposits in the same year was 5,690, the amount deposited being Rs. 1,77,876. There are 11 postal telegraphic offices from which 25,688 messages were despatched during the same year.

CHAPTER XI.

LAND REVENUE ADMINISTRATION.

DIVISION INTO ESTATES.

FOR purposes of Land Revenue Administration the district, as now constituted, is divided into 26 major estates, 24 permanently and 2 temporarily settled, besides 4 minor estates, consisting of Government camping grounds, let out from year to year. The revenue-roll also includes as a separate unit the demand in the shape of "police contribution" from one of the major estates (Pānchet). Besides these there are 25 "Digwari" estates, the holders of 14 of which pay a small *panchak*, or quit rent (Digwāri cess) to Government, the remainder paying Road and Public Works cesses only. The roll of the district also includes some 32 revenue-free properties, of which, however, only 27 include land within the present district boundaries.

Of the revenue-paying estates Pānchet is by far the largest both in extent and in respect of the revenue demand; it includes no less than 19 out of the 39 Parganas which make up the district area, covering in all 1,650 square miles in this district besides some 250 to 300 square miles in the adjoining districts of Burdwan, Bānkura and Rānchi, and paying a gross revenue of Rs. 55,794 on account of land and Rs. 1,754 by way of police contribution, or Rs. 57,548 in all. The remaining Parganas of the district constitute each, with two exceptions, single estates; the exceptions are Nāwagarh and Pāndra, each of which, for reasons to be detailed later, is subdivided into 4 shares or *kismats*, each constituting a separate estate. They range in size from the county-like Barābhum (according to the new survey records, 635 square miles) to the petty manor of Torang, barely 11 square miles in extent. Pātkum pays the highest amount in land revenue, *i.e.*, Rs. 3,165, after Pānchet, and Torāng the least, being assessed at Rs. 235 only. The total land revenue of the district is only Rs. 84,000, a sum which represents barely one anna per acre on the estimated area under cultivation. The reasons for this light assessment are to be found in the conditions existing when the Permanent Settlement was made, of which some indication has already been given in the second chapter of this volume.

Probable origin.

The generally accepted theory is that in the earliest times the greater part of Mānbhum district was occupied by Bhumij or Munda communities, each of which was under the authority of a village head, styled Munda. Groups of about twelve villages, called *parhas* were presided over by a divisional head or Mānki; and the Government of the country was carried on by these two grades of headmen in village or *parha* conclave No one can say precisely at what date this system was changed; but it was the opinion of Colonel Dalton, that "soon after the election of Phani Mukuta Rai as Rāja of the table-land of Chota Nāgpur Proper, the *parha* chiefs of Manbhum followed the lead of the highland chiefs, and elected Rājas of their own, all miraculously nurtured foundlings, and all now claiming to be Rājputs." Even in Colonel Dalton's time there remained only one (the zamindar of Bāghmundi) who had the good sense to acknowledge his Mundāri descent, but the conclusion that "all originally belonged to the races amidst which they dwelt is more or less forced on us by their position, their various fables of origin, and by the fact that intermarriages between the different families are or have been usual". Not all, however, were of Kolarian origin, one at least (Mānbhum) was probably a Bāgdi, and those of the north of the district almost certainly Bhuiyā. Of Pānchet, the conditions in which were somewhat different when the British took over the government, and which had a recognised position in the latter part of the Muhammadan era, perhaps all that need be said here is that, though probably the origin of the estate or of its nucleus and of the family was similar to the rest, its emergence from primitive or semi-primitive conditions must have been much earlier. It is in the southern and western estates, Barābhum, Pātkum and Bāghmundi that the clearest traces of their origin in the regular Mundāri system are still extant. Thus the Bāghmundi estate is to this day made of five groups of villages, one held *khas* by the zamindar, the other four by Mānkis on small rentals fixed in perpetuity. The small adjoining estate of Torang is an instance of a single *parha* being treated at the Permanent Settlement as an independent estate; its zamindar is still entitled 'Mānki'. In Barābhum the present arrangement of the grades of ghātwals provides an exact parallel to the regular Mundāri system; the lowest grade or *tabedars* are the *bhuinhars* or original tillers of the soil, the village *sardārs* the Mundas, and the *taraf sardārs* the Mankis, whose *tarafs* correspond with the *parhas* of the Mundari system. In Patkum a similar division into *tarafs* existed at one time throughout the estate, the quinquennial papers for 1202 Fasli (1797 A.D.) referring specifically to 12 such divisions, and of these at least two survive, one the shikmi tenure of Naro, the other being at present described as held on a *Murāri* tenure, and its holder as a 'Manda' or *Mura*.

Elsewhere traces of the Mundāri village system survive in various forms, though for the most part the grouping of villages into *parhas* or *tarafs* has disappeared; this in the area which came more directly under the influence of the Pānchet Rājas may well have been due to deliberate action taken to break up the local organisations as a source of possible opposition to their own authority, and to the substitution of a system of petty semi-military, semi-police chieftains drawn from their own entourage and more under their direct control; to this theory the survival of a large number of *jagirs* usually consisting of one or two villages, and for the most part on the outskirts of the estate, lends support North of Panchet and of the Damodar river there are even fewer traces of the typical Mundari organisation; and assuming that the chiefs are Bhuiya rather than Bhumij in origin and that the original home of the Bhuiyās was in the southern parts of Chota Nāgpur and the states adjoining where they had to give place to the invading Kols, it may be inferred that they had already their recognised chiefs when they arrived in northern Mānbhum, and that the constant necessity of resisting pressure from outside, the powerful states of Panchet, Bīrbhum and Bishnupur being their near neighbours, was sufficient to counteract any tendency to lessen the power of their chiefs by the formation of smaller groups based on a communal system The local traditions that the Jharia, Kātras and Nāwagarh houses were offshoots from the powerful Pālganj house in Hazaribāgh, and Pāndra and Nagarkiāri from Tundi, and that Pandra was previously a distinct "Mullik" state conquered by a scion of the Tundi house, suggest at any rate that the development of these estates was rather from a centre than to a centre (as was apparently the case in the south), a difference due to their chiefs being immigrants obliged from the first to hold their own under conditions adverse to any return to their original tribal conditions.

Suzerainty of Pānchet.

It is claimed on behalf of Pānchet that prior to the British accession all the northern estates and several of those on the west also acknowledged the suzerainty of the Panchet Rāja. This claim is not, however, borne out by any specific historical facts nor by internal evidence except perhaps in the case of Jhalda, which is described by Mr. Sheristadar Grant as "a recent territorial accession to Pānchet", but even in this case there was no such absorption into the conquering Rāj as to raise any question as to its suitability for separate settlement with its proprietor, and though the then Pānchet Raja was, as the old correspondence shows, quite ready at any time to file protests and petitions to higher authorities in regard to the manner in which the permanent settlement of his estate was effected no mention appears anywhere of any claim to have any one of these estates settled with him At the most his suzerainty, if it existed at all, must have been a nominal one, and can never have extended to interference with the internal arrangements of any of these estates.

The Permanent Settlement.

The Permanent Settlement was, therefore, effected with the hereditary chieftains or headmen of the various existing states or "Rājs" under circumstances which made it difficult, if not impossible, in most cases to fix the revenue with any definite reference to the value or the assets of the estate. As already noticed, there is no evidence to show that any of these estates, excepting perhaps Pandra, paid any regular revenue to the Muhammadan rulers, and it is probable that it was only on very rare occasions, if at all, that any of them were induced or forced to pay something in the shape of tribute, and when the British succeeded to the Dewani of Bengal, Bihar and Orissa there was very considerable difficulty for many years in enforcing the authority of the new Government on the chiefs of the estates, who are variously described as banditti, robbers or "chuars" in such literature as survives of this period. Of the manner in which the Permanent Settlement, and the temporary settlements which preceded it, the destruction of the district records in the mutiny, as well as the fact that parts of the district were settled from Midnapore, others from Ramgarh, and others again from Birbhum, renders it impossible to give any very accurate account except in the case of Pānchet which will be referred to later. The general inference to be drawn from such facts as are on record is that the settlement was less of the nature of a settlement of revenue with an ordinary zamindar than the fixing of a definite tribute to be paid by a number of semi-independent border chieftains.

Barābhum.

This conclusion is illustrated by the little that is definitely known about the early arrangements in Barābhum which, with Mānbazar, was one of original Jungle Mahals or Western Jungles of Chakla Midnapore and attached to Orissa. In 1778 the Jungle Mahals were described as divided into two thanas, thana Balarāmpur and thana Jaunpur, Barābhum being one of seven Parganas attached to the former thana. These are described as